

What is claimed is:

1 1. A metal halide lamp, comprising:
2 a ceramic arc tube that is composed of a main body
3 and two narrow tube parts provided at respective ends of
4 the main body;
5 a pair of electrodes provided inside the main body;
6 two feeders, each being connected at one end thereof
7 to a different one of the electrodes inside the main body,
8 and extending through a different one of the narrow tube
9 parts, so as to be external to the arc tube at another end;
10 a starting wire that is connected to one of the feeders,
11 and that is in a vicinity of or contacts an outer surface
12 of the arc tube; and
13 a current suppressing unit that is on a current path
14 of the starting wire, and suppresses or cuts off current
15 on the path.

1 2. The metal halide lamp of Claim 1, wherein
2 the current suppressing unit is a circuit breaking
3 element.

1 3. The metal halide lamp of Claim 2, wherein
2 the circuit breaking element is a resistor.

1 4. The metal halide lamp of Claim 3, wherein
2 a resistance value of the resistor is in a range of
3 1 k Ω to 1 M Ω , inclusive.

1 5. The metal halide lamp of Claim 4, having a power rating
2 in a range of 50W to 400W, inclusive,
3 wherein two terminals that each connect to a power
4 supply path are provided at two different positions on the
5 circuit breaking element, a distance between the terminals
6 being at least 4.5 mm.

1 6. The metal halide lamp of Claim 5, wherein
2 the arc tube is accommodated in an outer tube,
3 a sleeve that encloses at least the main body is
4 provided between the outer tube and the arc tube,
5 a first supporting part and a second supporting part
6 are provided at respective ends of the sleeve in order to
7 hold the sleeve, and
8 the circuit breaking element is provided in the outer
9 tube, in a space that is outside a space between the first
10 supporting part and second supporting part.

1 7. The metal halide lamp of Claim 6, wherein

2 the first supporting part is joined to the feeder to
3 which the starting wire is connected, and has an aperture
4 through which the starting wire passes, and

5 a minimum distance between the first supporting
6 part and a part of the starting wire that passes through
7 the aperture is at least 4.5 mm.

1 8. The metal halide lamp of Claim 7, wherein

2 one end of the starting wire is wound around a part
3 of the arc tube that is resistant to deformation if the
4 arc tube breaks.

1 9. The metal halide lamp Claim 2, wherein

2 the circuit breaking element is a capacitor.

1 10. The metal halide lamp of Claim 1, wherein

2 the current suppressing unit is a circuit breaking
3 element that cuts current to the starting wire within a
4 predetermined amount of time of abnormal discharge
5 commencing.

1 11. The metal halide lamp of Claim 10, wherein

2 the predetermined amount of time is 10 seconds.

1 12. The metal halide lamp of Claim 10, wherein
2 the predetermined amount of time is 1 second.

1 13. The metal halide lamp of Claim 12, wherein
2 the circuit breaking element is a fuse whose current
3 capacity is equal to or less than a value of current required
4 for ordinary operation of the metal halide lamp.

1 14. The metal halide lamp of Claim 13, wherein
2 two terminals that connect to a power supply path are
3 provided at two different positions on the circuit breaking
4 element, a distance between the terminals being at least
5 4.5 mm.

1 15. The metal halide lamp of Claim 14, wherein
2 the fuse is the starting wire.

1 16. The metal halide lamp of Claim 15, wherein
2 when abnormal discharge occurs, the starting wire
3 melts, within the predetermined amount of time, to an extent
4 that a discharge distance is insufficient for abnormal
5 discharge to continue.

1 17. The metal halide lamp of Claim 16, wherein

2 the starting wire is made of a metal selected from
3 the group consisting of molybdenum, tungsten, niobium, and
4 iron, or of an alloy that contains a metal selected from
5 the group.

1 18. The metal halide lamp of Claim 17, wherein
2 the starting wire is a molybdenum wire that has a
3 diameter of 0.2 mm or less.

1 19. The metal halide lamp of Claim 18, wherein
2 the arc tube is accommodated in an outer tube,
3 a sleeve that encloses at least the main body is
4 provided between the outer tube and the arc tube,
5 a first supporting part and a second supporting part
6 are provided at respective ends of the sleeve in order to
7 hold the sleeve, and
8 the circuit breaking element is provided in the outer
9 tube, in a space that is outside a space between the first
10 supporting part and second supporting part.

1 20. The metal halide lamp of claim 19, wherein
2 the first supporting part is joined to the feeder to
3 which the starting wire is connected, and has an aperture
4 through which the starting wire passes, and

5 a minimum distance between the first supporting
6 part and a part of the starting wire that passes through
7 the aperture is at least 4.5 mm.

1 21. The metal halide lamp of Claim 19, wherein
2 one end of the starting wire is wound around a part
3 of the arc tube that is resistant to deformation if the
4 arc tube breaks.

1 22. The metal halide lamp of Claim 2, further comprising:
2 a sleeve that encloses the arc tube; and
3 a supporting part that supports the sleeve at at least
4 one end of the sleeve, and is conductive,
5 wherein the starting wire passes through the
6 supporting part in a state of insulation from the supporting
7 part.

1 23. The metal halide lamp of Claim 22, wherein
2 the starting wire passes through insulation provided
3 on the supporting part, the insulation lying between the
4 starting wire and the supporting part.

1 24. The metal halide lamp of Claim 23, wherein
2 a slant distance between the starting wire and one

3 of the electrodes that is not the electrode connected to
4 the starting wire via the one of the feeders, is shorter
5 than a distance between the electrodes.

1 25. A metal halide lamp manufacturing method, comprising:
2 a starting wire formation step of forming a starting
3 wire by applying a bending process to a wire so as to bend
4 the wire into a shape that corresponds to a shape of an
5 arc tube;
6 a fitting step of fitting the formed starting wire
7 around an outer surface of the arc tube;
8 a connecting step of connecting the starting wire to
9 a mechanism that is present in the metal halide lamp and
10 that suppresses or cuts off current.

1 26. The manufacturing method of Claim 25, wherein
2 the arc tube is composed of a main body part and two
3 narrow tube parts that extend from respective ends of the
4 main body, and
5 in the starting wire forming step, at least two parts
6 of the wire are formed into fitting parts, each for fitting
7 to a different one of the narrow tube parts by winding
8 therearound with less than one turn.

1 27. The manufacturing method of Claim 26, wherein
2 respective axes of the narrow tube parts are on
3 substantially a same straight line, and
4 when the starter conductor is in a free state,
5 respective axes of the fitting parts are mutually offset.

1 28. The manufacturing method of Claim 27, wherein
2 the wire includes at least one element selected from
3 the group consisting of molybdenum, tungsten, niobium, and
4 iron.